

A dynamic, high-speed photograph of water splashing upwards, creating a large, billowing plume of water and numerous bubbles. The water is clear and bright, with highlights and shadows that give it a sense of movement and texture. The background is a plain, light color, making the water stand out prominently.

British Columbia's **Water Act** Modernization

Discussion Paper

“British Columbians are proud

of our rivers, lakes, streams and watersheds and recognise that keeping them healthy is important to all of us. A plentiful amount of clean water is needed for our growing communities, economic growth, healthy food, clean energy and our beautiful environment.


As a finite resource, water’s limits must be recognized, which means that the days of taking our ‘unlimited’ supply of water for granted have passed.”

Premier Gordon Campbell
Living Water Smart

How to use this paper

The purpose of the paper is to stimulate discussion on modernizing the *Water Act* and help you:

1. Understand the opportunity that modernizing the *Water Act* represents;
2. Consider the way water is managed in BC and how it can be strengthened; *and*
3. Prepare your submission of suggestions for a modernized *Water Act*.

Principles	The proposed principles have underpinned the development of this discussion paper and, once they are finalized after public input, will guide the policy development process.
Goals	The four goals shape the scope and vision of the <i>Water Act</i> modernization. Under each goal the current management context is discussed and the opportunities to improve the <i>Water Act</i> are identified.
Objectives	Objectives help answer “what” we hope to achieve under each goal using the <i>Water Act</i> . Objectives appear on a blue background.
Possible solutions	The possible solutions present a range of specific options that the <i>Water Act</i> could include. They help answer “how” we could achieve the goals and objectives through regulatory change. The options, marked by a water drop,  are a starting point for consideration and discussion. In many instances the possible solutions can help achieve multiple objectives.

Part One: *Water Act* modernization introduction outlines the process and scope of *Water Act* modernization (WAM) and provides information on future water challenges.

Part Two: Proposals for change proposes *principles* to underpin a modernized *Water Act* as well as the four goals. Under each goal are *objectives* and *possible solutions*. Part Two presents a range of opportunities for using, sustaining and managing water resources in a changing environment. This paper does not present any preferred option or position.

Part Three: Getting involved explains how to learn more and how to make a submission.

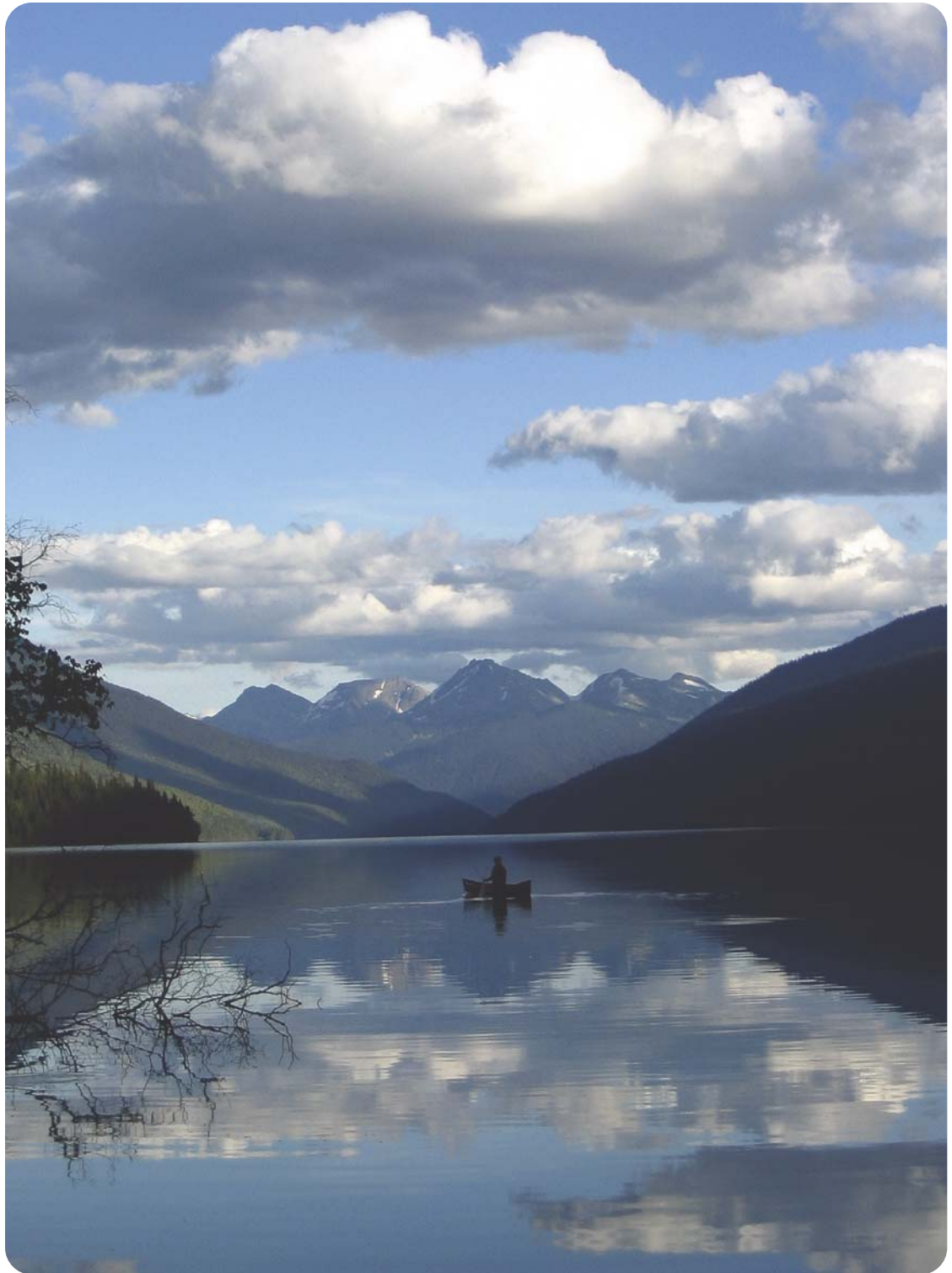
Government welcomes feedback on all sections. Questions within each section may guide the preparation of your submission. Submissions are invited until April 30, 2010.

This document can be read electronically and has live hyperlinks to additional information.

Section 10 contains resources cited throughout this document, and a glossary of terms.

Additional information on WAM is provided through the *Living Water Smart* (LWS) website and in an accompanying *Water Act* Modernization Technical Background Report.

Evening 'sampling'
on Isaac Lake
Darren DeFord



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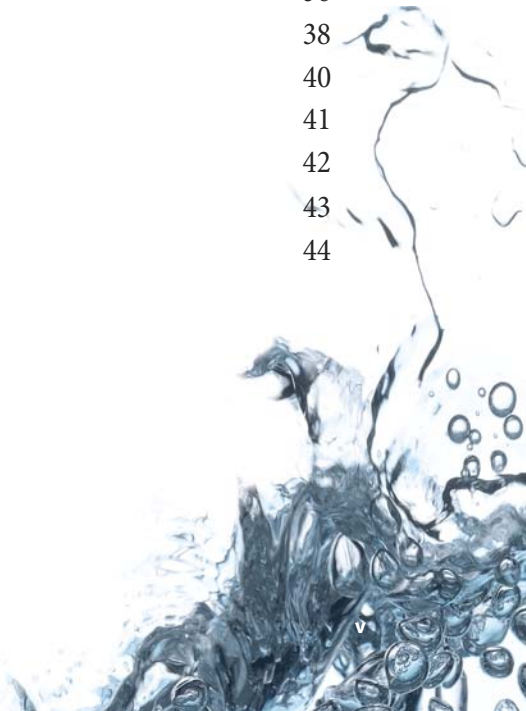
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Welcome

Water is needed for everything.

It supports BC's economy and our quality of life. Our water needs to remain clean, accessible and protected for a healthy environment and for future generations. A fresh and flexible approach to managing our water is required so BC can address competing demands, encourage efficient use of water, and plan ahead for future challenges.

To protect our water's future, government made several commitments to review the way water is governed and managed in *Living Water Smart: British Columbia's Water Plan*. The *Water Act* has a role to play in recognizing and balancing our needs for water with protecting nature's needs. Law reform is supported by other government and community actions that inspire water stewardship in BC.

Water is everyone's concern and we can all play a role in determining BC's water future. We would like to hear from you and encourage you to share your thoughts on the kind of future you envision for BC's water.



Handwritten signature of Barry Penner

Barry Penner
MINISTER OF ENVIRONMENT

Handwritten signature of John Slater

John Slater
PARLIAMENTARY SECRETARY
FOR WATER SUPPLY AND ALLOCATION

PART ONE

Water Act modernization introduction

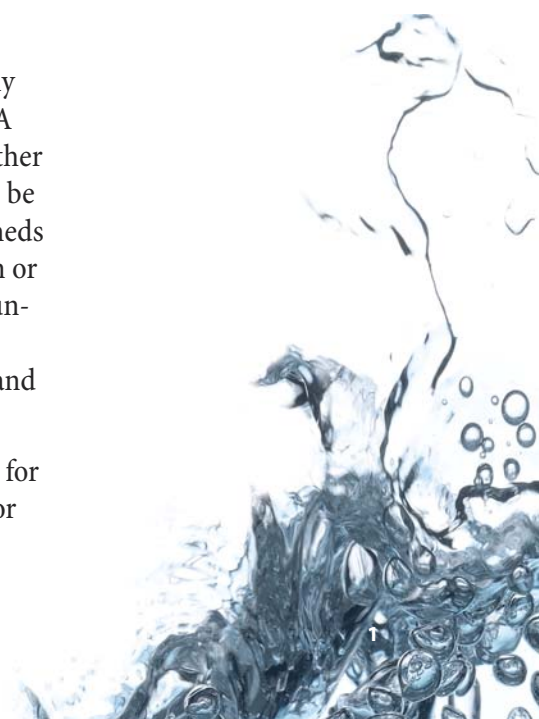


Wilsey Dam
Bert Brazier

The *Water Act* is the primary law in BC for managing our water resources and has a key role in ensuring the sustainability of BC’s water resources. Under the *Water Act* government makes decisions on licences to: divert and use water in streams (water allocation); construct works or make other changes in and about a stream; and any change or transfer to water licences. Water management planning, water allocation planning and drought management are also included in the *Water Act*. To respond to new challenges that exist for managing our water, including dealing with population growth and climate change, the government is looking at ways to modernize the *Water Act*.

The word **stream** is often used in this document and has a broad definition under the *Water Act*. It includes a natural watercourse or source of supply, whether usually containing water or not, and a lake, river, creek, spring, ravine, swamp and gulch. A **watershed** is the region or area of land that drains into a stream, river system, or other body of water. Watersheds are divided by mountains or hill ridges. Watersheds can be considered at different scales from a basin scale (made up of many smaller watersheds that drain into a large river) to a small scale watershed with drainage to one stream or lake. Water under the ground—**groundwater**—is stored in an **aquifer** which is an underground deposit of permeable materials (usually sand or gravel), where water is stored. Aquifers can be interconnected to other aquifers and surface water bodies and can occur at various depths.

Everybody lives and works in a watershed. In BC watersheds and aquifers are used for multiple purposes which may include farming and industrial activities as well as for drinking water and recreation.



1 The Water Act modernization process

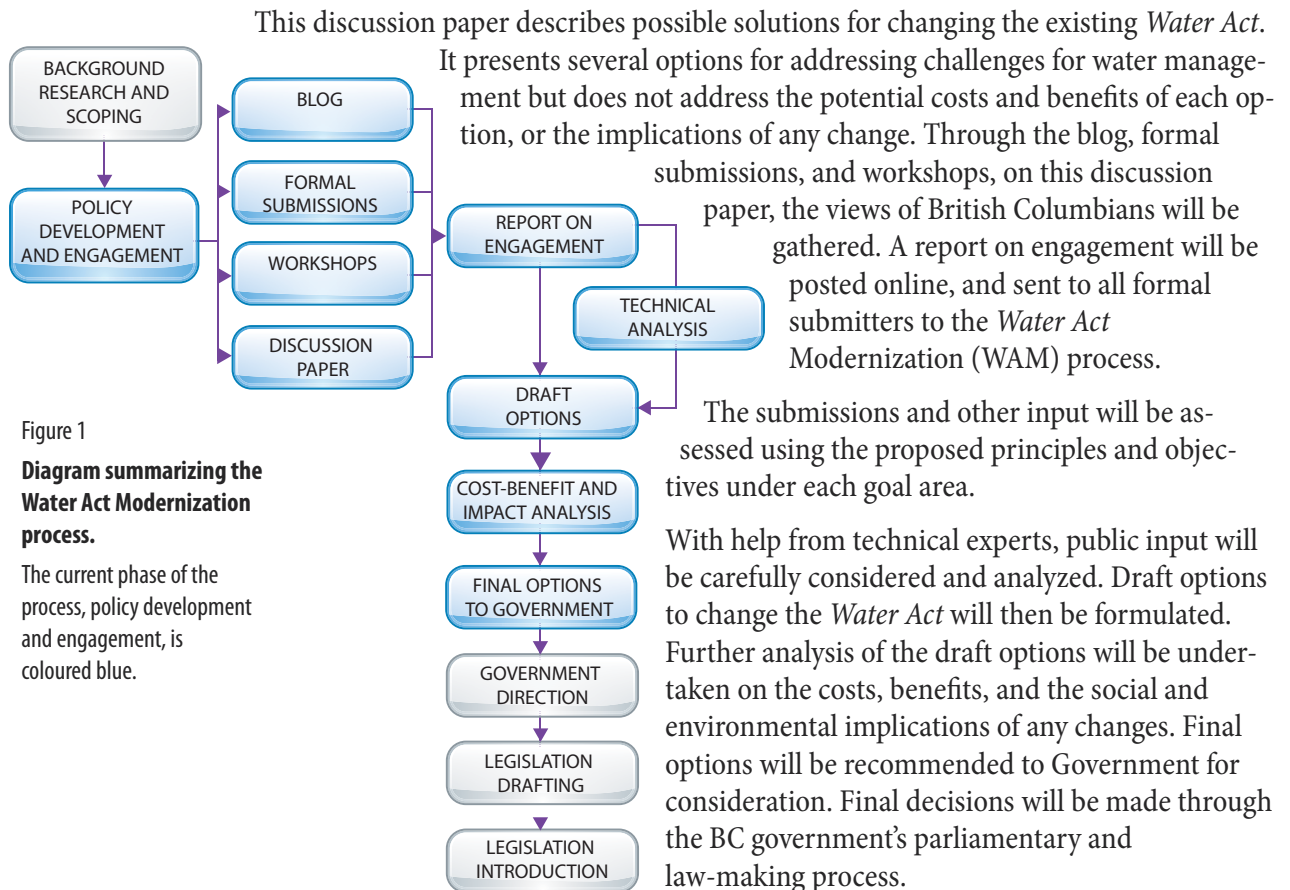


Figure 1

Diagram summarizing the Water Act Modernization process.

The current phase of the process, policy development and engagement, is coloured blue.

2 The scope of the Water Act modernization

The *Water Act* helps to secure and protect our water resources thereby keeping our environment, economy and investment climate strong for future generations. The content of this paper has been informed through engagement with First Nations and stakeholders through workshops, meetings, letters, reports and direct discussions. Four goals shape this *Water Act* modernization opportunity:

1. **Protect stream health and aquatic environments**
2. **Improve water governance arrangements**
3. **Introduce more flexibility and efficiency in the water allocation system**
4. **Regulate groundwater extraction and use in priority areas and for large withdrawals**

The scope of WAM is limited to the *Water Act's* functions, policies and decision making processes. This includes how it interacts with other legislation, such as the water quality provisions of the *Environmental Management Act*, the fish habitat provisions of the federal *Fisheries Act*, and the drinking water provisions in the *Drinking Water Protection Act*. WAM will not revisit government plans such as the *Climate Action Plan*, BC's *Energy Plan* or the bulk-water removal and inter-basin

transfer prohibitions in the *Water Protection Act*. Amendments to other laws may be made so they are consistent with the *Water Act*. Where appropriate, a modernized *Water Act* could improve alignment with overlapping elements of federal legislation such as the *Fisheries Act* and the *Species at Risk Act*.

3 Why consider changing the Water Act?

Water law in British Columbia has evolved over more than 100 years although most of the principles were established in or before the first *Water Act* of 1909. BC's *Water Act* is one of the province's oldest provincial statutes. It reflects the issues and practices of a time when BC's population was less than 500,000, water was considered plentiful, and industrial and agricultural developments were only emerging. Societal expectations and values have, and will continue to change. British Columbians care about keeping our water resources healthy and sustainable and have a strong desire to maintain salmon and other fish stocks and their habitat. Our understanding of the effects of human activities on watershed health has also increased significantly.



Elk River Trail in
Strathcona Park
Ted White

The challenges in the 21st century are very different to those of the last century. Over the next 25 years the population of BC is expected to increase by 1.4 million people and our climate is changing. Population growth means increased demands on our water resource for drinking, for irrigation, for power generation and increased effects on the water from land-based activities such as urbanization, forestry and other resource extraction activities. The implications of climate change for BC's water are significant. They include changes in rainfall and snowfall, increasing magnitude of storm events and altered timing and magnitude of peak flows and low flows.¹ Stream and lake temperatures are also predicted to rise, which is of vital importance to salmon which are sensitive to high water temperatures during their migration up river to spawn.² Drought conditions and low stream flows in summer will be more common and may increase conflicts among water users and between water users and the environment. These issues will put additional pressure on watersheds and mean future stream flow patterns may not reflect past patterns.

In the past there have been few incentives to improve water efficiency and conservation in the province and British Columbians are among the largest consumers of water in the world. Currently, about 5000 water sources in BC have identified water shortages or restrictions, which can limit future surface water withdrawals, cause conflicts during

1 Information on the hydrological impact of climate change in BC can be found on www.livingwatersmart.ca.

2 Environmental Trends in BC, Ministry of Environment 2007.

times of drought and shift water demands to groundwater. Additional water obtained from conservation could provide much needed flexibility to meet new or alternative water requirements, including leaving it in the stream for environmental benefits.

Groundwater provides drinking water to about a million British Columbians. It also sustains many species by providing base flows in streams. While the use of groundwater provides economic benefits, the current legislative framework provides few controls on its extraction and use. Between 2000 and 2005, 35 per cent of groundwater observation wells showed declining water levels, primarily due to increasing use for irrigation and urban development.³ Regulating the extraction and use of groundwater can help to protect its accessibility and ensure it remains a safe and secure resource for future generations.

Most First Nation reserve lands have associated water licences. However, many First Nations have also expressed interest in additional volumes of water for community and economic development purposes. The *Water Act* could also reflect some of the unique cultural interests First Nations may have with water and promote the use of traditional knowledge in water stewardship and decision making.

An innovative and progressive system is needed to balance all of the demands and pressures on our water resources. It is recognised that businesses and communities in BC are responding to many of these challenges with proposals to improve water conservation, utilize new technologies, adapt to the potential changes in climate, and improve awareness of the needs of the environment. Government also needs to incorporate and adapt to new information, technologies, values and expectations.

It is hoped that throughout the *Water Act* modernization process British Columbians will understand the need to collaborate on water issues and prepare for climate change impacts, which may mean doing business differently. Land and water activities may need to change if stream health and aquifer health objectives are not being met. Changes to water laws or reviews of water allocation decisions made in the past may well require some difficult adjustments to be made. Any changes to laws will address stakeholder interests in an equitable way and allow transition time for people and businesses to adjust.

To be successful, a modernized *Water Act* must provide a degree of certainty for people, businesses and the environment and must also allow us to adapt over time to changing demands and priorities. Today BC has an opportunity to adapt to the impacts of climate change and update the way we manage water, to help build a green economy and protect the interests of future generations.

3 Environmental Trends in BC Ministry of Environment 2007.

PART TWO

Proposals for change



Yoho Cascade
Kevin Ronneseth

4 Principles

WAM is an opportunity to ensure the principles underlying the *Water Act* respond to modern expectations, as well as promote stream health and water security. These principles have underpinned the development of this discussion paper and, once finalized through engagement, will help to guide the policy development process.

Your views are welcome on the following proposed principles:

1. BC's water resources are used within sustainable limits.
2. First Nations social and cultural practices associated with water are respected and accommodated.
3. Science informs water resource management and decision making.
4. Water resource legislation, policy and decision making processes as well as management tools are integrated across all levels of government.
5. Rules and standards for water management are clearly defined, providing a predictable investment climate across the province.
6. Flexibility is provided to adapt to extreme conditions or unexpected events on a provincial, regional or issue-specific level.
7. Incentives are created for water conservation that consider the needs of users and investors.
8. Rights to use water come with responsibilities to be efficient and help protect stream health.

1

Protect stream health and aquatic environments

Stream health is the combined measure of a stream's ecological integrity and function. This includes flow variability between seasons, the ability of the stream to provide environmental services, water quality and its resilience to disturbance. Stream health can be measured using water chemistry, biological monitoring and stream flow information.

Protecting stream health relies on effective governance, laws, and management to regulate the wide range of activities that may degrade stream health. The *Water Act* is one law within an ensemble of environmental laws and policies that protect stream health in BC. An overview of how other environmental laws protect stream health is provided in *Resource 10.2*.

The scope of the *Water Act* with respect to protecting stream health is:

- ensuring adequate water flows are maintained for stream health;
- protecting habitat in and adjacent to streams; *and*
- reducing water quality impacts by prohibiting dumping of debris and other material into streams.

An environmental flow is the amount of water required in a stream to meet certain objectives such as to protect fish, wildlife or other biological values. Environmental flows are also maintained for recreation, navigation and the dilution of permitted discharges such as effluent. The way an environmental flow is determined and applied can be different depending on the objectives to be met. For example:

- minimum flows to dilute permitted discharges of effluent;
- seasonal amounts of water required to protect stream health and the water available for allocation; *or*
- conditions for projects that affect stream flow across seasons e.g., a water power development or municipal waterworks.

Environmental flows are set and used differently across the province. Fifteen streams are designated under the *Sensitive Stream Regulation* and require the protection of environmental flows in allocation decisions. Other *Water Act* decisions may consider environmental flows to protect fish needs and coordinate with the federal *Fisheries Act*. A consistent approach applied to all decisions would help water licence applicants and stakeholders understand how environmental flow needs will be considered in future allocation decisions.

Water allocation plans are water supply and demand studies conducted on a watershed basis that determine the amount of water that is still available for allocation and the amount the environment needs. The use of water allocation plans has demonstrated benefits for decision makers, applicants and the public. These plans are used on

Vancouver Island and have improved the efficiency of making water allocation decisions and they protect environmental flows. Developing a plan makes this information readily available for water licence applicants and other stakeholders. Water allocation plans also assist government agencies and water licence applicants in coordinating with other environmental laws.

The *Water Act* protects stream habitat by regulating the changes that may be made in and about a stream. The Ministry of Environment allows low risk activities to occur under certain guidelines and requires detailed review and approval of higher risk activities. The *Water Act* provisions for changes in and about a stream are applied in areas where the *Forest and Range Practices Act* and the *Riparian Areas Regulation* do not apply. Although the *Water Act* provisions are effective, there are opportunities to improve coordination with other legislation.

The protection of water quality could be improved by strengthening provisions in the *Water Act* regarding the dumping of certain substances into streams. The *Water Act* can restrict the dumping of material into streams using an engineer's order. This provision is reactive, and can be improved by clearly making the dumping of a wider range of materials into a stream an offence, and requiring appropriate restoration. In addition to improving stream health protection, this would improve protection of fish habitat and support the federal *Fisheries Act*.

Water Management Plans and Water Quality Objectives are two additional tools that may be used to address risks to water quality. Water Management Plans, enabled by Part 4 of the *Water Act* are implemented by regulations that can influence decisions made under other provincial laws. However, the usefulness of this tool for coordinating with other laws and for improving water quality has not been tested. Water Quality Objectives, which are developed for a specific water body, provide another way to protect stream health. The requirement to consider Water Quality Objectives could be included under a modernized *Water Act* as well as decisions made under other environmental laws.

Reviewing the *Water Act* provides an opportunity to improve stream health protection and the alignment and coordination with other provincial, federal and local laws. Any changes made to protect stream health may have implications on water governance and the flexibility and efficiency in water allocation.

5.1 Objectives for protecting stream health and aquatic environments

In order to better protect stream health and aquatic environments the following objectives are proposed for a modernized *Water Act*:

1. Environmental flow needs are considered in all water allocation decisions to protect stream health
2. Watershed or aquifer-based water allocation plans include environmental flows and the water available for consumptive use
3. Habitat and riparian area protection provisions are enhanced

Indicate your level of support for the objectives proposed.

STRONGLY
SUPPORT

SUPPORT

NEUTRAL

DISAGREE

STRONGLY
DISAGREE

5.2 Possible Solutions

The possible solutions for protecting stream health in this paper are based on how the *Water Act* can be more effective in protecting stream health, in particular by expressly requiring environmental flows to be considered in all new water licensing decisions.⁴ Clarifying how environmental flows will be considered in decisions helps water users, potential investors and decision makers understand the water licence application process. Also included are proposals for habitat and riparian protection that aim to improve efficiency in habitat protection and streamline responses to some activities that may degrade stream health.

OBJECTIVE ONE

Environmental flows are considered in all water allocation decisions to protect stream health.

The methods to determine environmental flows can be divided into two groups, *standard setting* and *detailed assessments*. *Standard setting* methods provide an account of environmental flow needs and water availability over time. Although simpler and less resource intensive, they are not as ecologically defensible as *detailed assessments*. *Detailed assessments* are more specific to the stream and can be used to develop more confident flow recommendations. Experience elsewhere, and in BC, has shown that an effective approach is to use both kinds of assessment methods depending on the risk to stream health.

⁴ Although it is not in force, section 5 of the *Fish Protection Act* provides for the Comptroller or Regional Water Manager to consider fish and fish habitat in licensing decisions.

This dual approach is already successfully used on Vancouver Island in its water allocation policies, and is incorporated into the provincial interim instream flow thresholds.⁵ These interim instream flow thresholds were developed primarily for use in the review of applications for water power projects. In future, a *standard setting* method will be used for low risk withdrawals, such as domestic water and small irrigation, and *detailed assessment* methods for high risk applications, such as waterworks or water power. The environmental flow methods used in BC are explored in the *Water Act* Modernization Technical Background Report.



Options for how environmental flow is to be considered in decisions

Aside from being included in water licence conditions known as ‘fish clauses’, the protection of environmental flows may also occur via a stream flow protection licence, or through a water reserve. Two options are proposed for requiring the decision maker to consider environmental flows when making new water allocation decisions. The decision makers under the *Water Act* for water licences are the Comptroller of Water Rights and the Regional Water Manager.

A. Environmental Flow Guidelines

- In this option the environmental flow recommendations are guidelines, from which the decision maker may deviate in certain circumstances. Clear justification must be provided for any deviation and applicants could appeal decisions.

OR

B. Environmental Flow Standards

- In this option the environmental flow recommendations become standards that the decision maker must adhere to with no exceptions.

The distinction between the options is the degree of discretion provided to the decision maker when reviewing a water licence application. The *guidelines* option allows the decision maker to consider environmental flows on a case-by-case basis and use conditions in a licence to avoid or minimize potential impacts on stream health. Under the *guidelines* option if an applicant feels the environmental flow recommendation is too conservative, the applicant may be able to scientifically demonstrate that their application will not impact stream health.

The *standards* option has more certainty but is less flexible, meaning that there may be greater emphasis placed on the determination of environmental flows. The *standards* option would need more time and resources to determine as they would be legally enforceable. This may result in longer licence processing times and have increased costs for new licence applicants. The *standards* option may be viewed as providing greater protection to stream health; however, because of their inflexibility, they could lead to more permissive recommendations. The two options have different implications for flexibility and efficiency in the administration of the *Water Act*, and water governance arrangements.

5 Development of instream flow thresholds as guidelines for reviewing proposed water uses. Hatfield, *et al.* 2003.

Which option do you prefer, and why? Are there others?

OBJECTIVE TWO

Watershed-based water allocation plans include environmental flow needs and the water available for consumptive use.

Water allocation plans are watershed scale supply and demand studies that can determine the amount of water that is available for allocation while ensuring environmental objectives are met. Investors and planners find this information to plan helpful to plan for land use and economic growth. The attributes of water allocation plans are summarized in Table 1. The role of land and water planning is discussed in more detail in Goal Two.

Water allocation plans are currently developed within government to guide decisions. Developing a plan requires resources, however they have been found to provide efficiencies for both decision makers and applicants. A modernized *Water Act* could change the conditions for initiating and using water allocation plans in decision making. Depending on the results of governance discussions in Goal Two, there may be potential to involve other stakeholders or levels of government in developing the plan. If other entities took on the responsibility for developing plans, clear guidance would be provided to ensure that provincial results and objectives are met.

Water allocation plans are operational planning tools that help determine the quantity of water that is required in a watershed to protect stream health and identify the quantity of water available for allocation. These are different than Water Management Plans under Part 4 of the *Water Act* that are initiated by an order of the Minister and brought into effect by regulation.

For more information on water plans visit www.livingwatersmart.ca.

Table 1. Components of a water allocation plan

Purpose	<ul style="list-style-type: none"> ■ Quantify water available for allocation and how much is already allocated ■ Describe environmental flow recommendation for stream health ■ Reduce time required to process applications ■ Increased transparency in water allocation decisions
Primary attributes of plan	<ul style="list-style-type: none"> ■ Description of watershed hydrology (plus any projected changes to stream flow) and water quality (surface and ground) ■ Summary of existing water uses and instream flow requirements (e.g., aquatic life, effluent dilution, navigation, or recreation) ■ Evaluation of water required for ecosystem needs and potentially available for allocation ■ Description of possible conditions to be included in water allocation decisions ■ Defines specific results for stream flows to determine if stream health outcomes are being achieved ■ Sets out possible responses if stream flow results are not met



Options for including water allocation plans in the Water Act

Consideration must be given as to whether the development of water allocation plans could be optional or required, and determining the level of discretion decision makers have for the resulting plan's application.

A. The development of water allocation plans is optional

- Developed at the discretion of the Regional Water Manager and could be based on increasing water demand and decreasing water supplies, changing environmental conditions, conflicts among users, or at the request of a water user community.

OR

B. The development of water allocation plans is required

- Plans may be developed province-wide, *or*
- Criteria to determine priority areas may be developed, with priority areas requiring a plan, *or*
- Plans may be ordered by the Comptroller of Water Rights.

AND

C. The decision maker must consider the water allocation plan

- Once adopted, decision makers must consider plans. Although the decision maker is not bound by the plan they would be required to explain reasons for any decisions that do not follow the plan's recommendations.

OR

D. The decision maker must follow the water allocation plan

- Once adopted, the plan must be followed with no exceptions by the decision maker.

Which options do you prefer, and why? Are there others?

Under what conditions should a water allocation plan be developed and how should it be applied?

OBJECTIVE THREE

Habitat and riparian area protection provisions are enhanced.

The *Water Act* defines materials that someone may be ordered to stop introducing or not introduce (dumping) into a stream. Stream health and fish habitat would be better protected if the dumping of a wider range of materials into a stream was prohibited, and the authority for responding to dumping and requiring restoration was clear.



Options for protecting habitat and riparian areas

A. Maintain the requirement for an engineer’s order to prohibit dumping of material into streams (reflects current situation).

OR

B. Amend the *Water Act* to include a prohibition against dumping of a wider range of debris and materials into streams, with a requirement for the person responsible for dumping to restore stream health.

Which option do you prefer, and why? Are there others?

GOAL TWO Improve water governance arrangements

Water governance is a broad and complex concept that includes the laws and regulations, the agencies and institutions that are responsible for decision making, and the policies and procedures that are used to make decisions and manage water resources. Governance also includes the way that science, information, community and traditional knowledge inform laws, policies and decisions.

Put simply, a water governance framework includes three dimensions made up of a number of elements described below. See *Resource 10.5* for a fuller discussion and examples.

- **Laws, rules, agreements and financing arrangements** e.g. federal and provincial legislation, policies, processes, budgets, boundary and inter-jurisdictional agreements;
- **Institutions, systems, roles and responsibilities** e.g. agencies, information bases and the determination of who does what and how; and
- **Operational management functions** e.g. planning, issues response, decisions, enforcement, and outreach.

British Columbians are interested in water and are acting to protect and sustain it. Working together, government, industry, academia, non-government agencies and communities are learning how to mitigate and adapt to the impacts of climate change and rapid population growth. Conversations on water governance have shown significant interest in exploring the roles and responsibilities for input into water related planning and decision making for water. At the same time, governments at all levels are looking for ways to streamline their administrative role and reduce their resource needs. Creative solutions are being sought for funding and for effectively and fairly distributing the various roles and responsibilities for managing water as a natural resource as efficiently and effectively as possible.

Canada's Constitution sets out the roles of the provincial and federal government with respect to water management and stewardship. Water governance in BC is primarily set out in the *Water Act* which, together with the *Water Protection Act*, determines that water resources are owned by the Crown. Crown ownership will not be revisited under WAM and water will continue to be managed in the public trust for current and future generations. Under the *Water Act*, provincial decision makers license and regulate only the use of surface water from streams as well as authorize and regulate changes in and about streams. Changes in and about streams include any modifications that result in changes to the natural flow of water.

The local government system in British Columbia is comprised of 160 municipalities, 27 regional districts and 227 improvement districts.

The federal government also influences water governance in BC. The role of the federal government relates to the protection of fish and fish habitat under the *Fisheries Act* and species at risk and their habitat under the *Species at Risk Act*. In addition, trans-boundary and inter-provincial projects are subject to review by the federal government under the *Canadian Environmental Assessment Act*. The federal government negotiates and manages agreements relating to trans-boundary waters bodies.

Provincial laws can provide for the delegation of water management responsibilities to local governments. Local governments can only exercise powers that have been delegated to them by the province. Current provincial legislation allows local governments to enact bylaws that help protect public assets and the environmental well being of the community. In BC, local governments also have specific delegated responsibilities with respect to decisions regarding flood protection, riparian area management, drinking water supplies as well as wastewater and stormwater management. In addition to these responsibilities, local governments promote community and economic development which has the potential to impact water resources. Many local governments are interested in ways to protect stream health on a local level.

Other provincial legislation connected to the management of water include the: *Drinking Water Protection Act, Environmental Management Act, Dike Maintenance Act, Fish Protection Act, Local Government Act and Community Charter, Water Protection Act, Park Act, Oil and Gas Activities Act and Forest and Range Practices Act*.

As a result of these many laws and responsibilities, the management of water is complex. Figuring out who does what can be confusing. Improved alignment within provincial laws and between federal and provincial jurisdiction could allow government agencies to make faster and more effective decisions.

Land use activities affect the health of our water. Therefore a key aspect of water governance and participation in decision making is the role and function of planning. Plans can help to integrate the management of water into land management and complement community planning processes and decisions. While there are several existing types of water plans (usually for specific purposes and costly to prepare), there are benefits to considering water and stream health in planning for land activities. There are opportunities to maximize the use of planning resources by including water related issues and guidance for addressing these issues into existing plans such as *Official Community Plans* (OCP) adopted by local governments, *Regional Growth Strategies* (RGS) adopted by Regional Districts, and provincial and First Nations land and resource plans.

British Columbia has 291,000 unique watersheds.

BC's water resources vary significantly from watershed to watershed and a 'one size' approach to water governance will not fit all. There is a clear need for flexibility in water governance arrangements so decision makers can adapt or respond quickly to future issues or needs. Enabling changes to water governance in the *Water Act* could allow for the delegation of certain responsibilities or decisions, with the province keeping a standard setting and oversight role.

When considering governance arrangements, it is useful to think about what decisions should be considered at the provincial level, and what decisions can best be determined

at the local level applying local expertise. Setting environmental standards and environmental objectives should be consistent throughout the province. However, taking actions to meet the standards and objectives at the local level would benefit from knowledge of the local context.

Making changes to water governance is complex and any proposals will need to consider the time and resources needed for any transition. Modernizing the *Water Act* provides an opportunity to investigate governance arrangements, including new or existing institutions, roles and responsibilities for water management decisions.

Through the Water Governance Project, British Columbians have been investigating watershed-based governance and discussing potential models. In 2008 a number of workshops were held across the province with participation from a broad representation of people living, working and investing in watersheds. Water governance considerations and possible approaches presented in this section are informed by these discussions and two reports: *Delegating Water Governance: Issues and Challenges in the BC Context* by Nowlan and Bakker 2007; and *Setting a New Course in British Columbia – Water Governance Reform Options and Opportunities* by Brandes and Curran 2009.

The Water Governance Project was a partnership between the BC Ministry of Environment, the Fraser Basin Council, Georgia Basin-Vancouver Island Living Rivers, and Fisheries and Oceans Canada.

6.1 Objectives for improving water governance

In order to improve BC’s water governance arrangements the following objectives are proposed for a modernized *Water Act*:

1. Governance roles and accountabilities are clarified in relation to the allocation of water and the protection of stream health
This includes roles for First Nations, industry, local communities and non-government organizations in planning and decision making
2. Governance arrangements are flexible and responsive to future needs and values
3. Management is coordinated with neighbouring jurisdictions across all levels of government and those with a major interest in the watershed

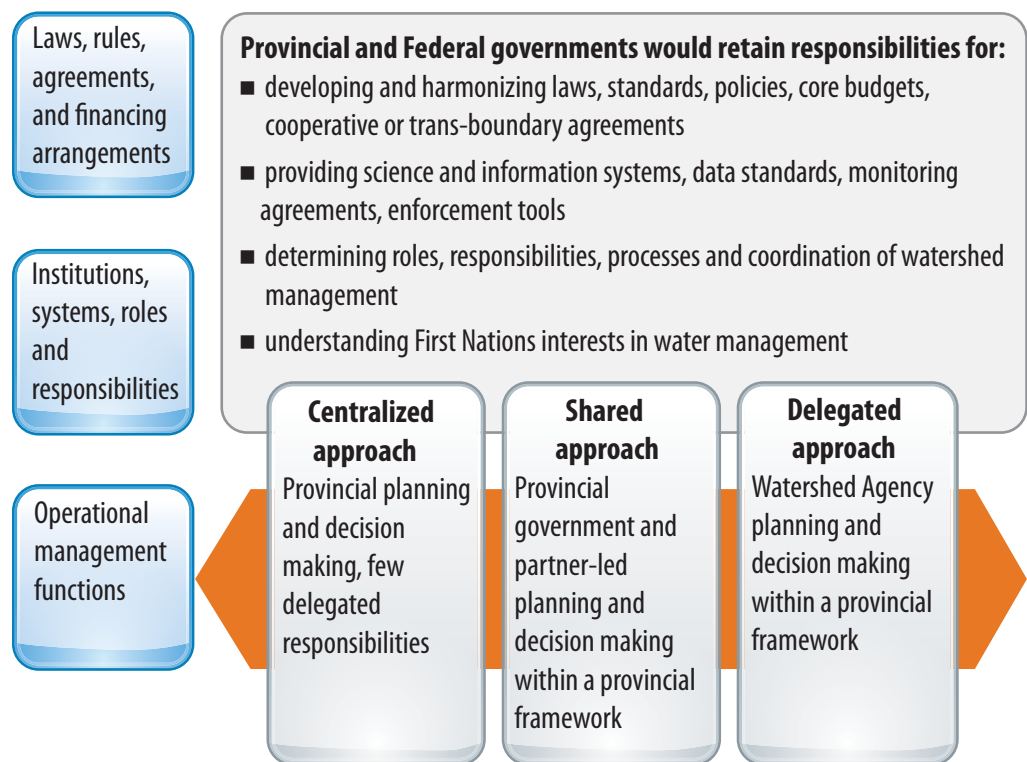
Indicate your level of support for the objectives proposed.

- STRONGLY SUPPORT
 SUPPORT
 NEUTRAL
 DISAGREE
 STRONGLY DISAGREE

6.2 Possible Solutions

Three approaches for water governance are raised for discussion; they reflect a wide spectrum of decision making responsibilities. At one end is the *centralized* approach; at the other end the *delegated* approach; and in between, the *shared* approach. In any approach the province would retain the ultimate responsibility for fulfilling the duty to consult with First Nations, although some procedural aspects of consultation may be shared. The appropriate scale of watershed, accountability and dispute resolution processes would need to be clear in any chosen approach. These three approaches are illustrated in Figure 2 and further explored in *Resources 10.4* and *10.5*.

FIGURE 2: Water Governance Framework and Possible Solutions



The institutions that make decisions in these approaches are different. In the *centralized* approach, the provincial government is the main decision making institution. In the *shared* approach, the province would share decision making responsibilities with a partner. In order to implement the *delegated* approach, new institutional arrangements would be required. A hybrid approach could also be enabled. In any approach, decision making would be bound by and reflect objectives and outcomes set at the federal and provincial level. Clear criteria would be used to make governance changes so that the resulting mandates of government and other entities are predictable and consistent throughout the province. Essentially, the areas of potential change in governance are to the institutions and the operational management functions. This is discussed further in the following sections and in *Resource 10.4*.



Options for improving water governance

A. Centralized approach

The provincial government would continue to make most water management decisions in the *centralized* approach. There would be improvements to the current arrangements through resource management coordination and unified processes for environmental assessment and permitting. Governance arrangements would not change significantly. Streamlined processes and computerized decision-support tools can provide data standards, simplify and add transparency to decision making processes. Provincial government officials would continue to develop coordinated business plans, communications, training and integrated service delivery. For example, government will facilitate a single consultation process for First Nations on applications that require permits from multiple agencies. This would help speed up government approvals and decision making times (especially for low risk transactions), reduce the consultation burden on First Nations, and ensure government remains accountable for the protection of environmental flow needs and stream health.

The modernized *Water Act* could require water allocation planning and the consideration of stream health in decisions. Advice and participation from First Nations and other stakeholders in the watershed could be sought during the water allocation planning process. Increased provincial engagement in local government planning processes for land use could also improve the integration of water considerations into planning at the local level.

The role of licence holders may also change under this approach to motivate compliance and help prioritize enforcement activities. As appropriate, water users would be responsible to report actual water use and declare compliance with water licence conditions.

B. Shared approach

The *shared* approach delegates specific water management functions and decisions to a First Nation or partner institution such as an existing Regional District, depending on their capacity or willingness to undertake responsibilities. Any delegated decision making would rest with representatives who are locally elected or appointed by government. The *shared* approach could improve local visioning and shared decision making for water, and could rely on existing institutions and planning arrangements for its implementation. If the management of water occurred on a watershed basis, then agreements to work collaboratively with other jurisdictions sharing the watershed would form part of the approach (see *Resource 10.6* for a map of Regional District Boundaries).

Partner institutions could lead regional visioning and planning processes for watershed planning, and extend current public education and outreach activities. Land use plans, Regional Growth Strategies, Official Community Plans and watershed management plans could be used to articulate water management values and

priorities. Wider First Nations and stakeholder involvement could be enabled through advisory committees or consultation arrangements. The enabling provisions could allow for partner institutions to increase their responsibilities over time. Government would continue to set strategic direction and policy.

C. Delegated approach

Under the *delegated* approach most water management functions and decisions would be delegated to a watershed or regional-scale agency which could be called a ‘watershed agency’. Of the three approaches, the *delegated* approach represents the greatest potential change to the current governance arrangements. Watershed agencies would be new and, to implement this approach, they would need the ability to influence land use planning and development activities. Existing entities (such as the Okanagan Basin Water Board or other basin-scale entity) could also be designated as a watershed agency.

Watershed agencies would involve First Nations, lead public consultations for local visioning and value setting, and would be responsible for developing and implementing (provincially approved) watershed management and water allocation plans. Watershed agencies would be responsible for monitoring, reporting, and educating residents about the watershed. Decision makers in this model might represent a range of interests in the watershed and could be locally elected or appointed by government.

Watershed agencies could take on additional functions based on need, issues and risk, regional population, capacity and willingness. The scale of watershed agencies may be determined using the 26 existing ‘water district’ designations currently in the *Water Act* (see *Resource 10.6* for a map of Water District boundaries). Alternatively, other science-based means for determining watershed boundaries and groundwater aquifer and recharge areas may be identified.

In all three approaches the provincial and federal governments would continue to be responsible for setting and coordinating the laws, rules, agreements and financing arrangements, and would ultimately be responsible for deciding the institutions, systems, roles and responsibilities. This includes an enforcement framework that is consistent with other natural resource legislation, information standards, and stream health objectives and results to be met. The provincial government would retain high risk, multiple-watershed or multi-agency decisions. Depending on the approach chosen an oversight body may be needed to review practices, monitor effectiveness and investigate complaints. Solutions for funding water management, science and information requirements and capacity building would also need to be identified and enabled through other legislation.

Watershed boundaries may not coincide with local authority boundaries (such as municipalities, regional districts, water districts, improvement districts or other governments). Depending on the watershed, such boundaries may involve areas within the jurisdiction of one or more local governments. Agreements for working collaboratively

with other jurisdictions and organizations on common issues, such as land use planning and development activities would form part of the chosen approach.

Which approach do you prefer, and why? Are there others?

What scale of watershed is most appropriate for water planning and management (see Resource 10.6)?

What funding solutions might help to implement the approaches?

What are the important considerations for accountability, transparency, and dispute resolution processes in any delegated or shared approach?

What are the benefits and implications of sharing roles for water stewardship?

Introduce more flexibility and efficiency in the water allocation system

British Columbia's current water allocation system clearly defines access to the right to divert and use surface water from streams in a predictable way that has facilitated settlement, agriculture and economic development. However, it was designed for a time when the population was small and water shortages were not common. Like many western provinces and states, BC's *Water Act* adopted the 'first-in-time, first-in-right' FITFIR method of water allocation which assigns higher priority (thereby affecting the value and security of licence) to water licences according to the date of precedence. Aside from power licences, water licences generally do not expire or come up for review. This means there are limited ways to review the terms and conditions of licences and adjust them in response to new information or conditions. In addition, the extraction and use of groundwater is not licensed and only large volume extractions undergo a review under the *Environmental Assessment Act*.

Decision makers typically consider water licence applications for rights to divert and use water on a stream-by-stream basis rather than on a larger watershed basis. This can make it difficult to consider broader interactions and impacts within the legal framework. There are about 44,000 active water licences in BC. Water licences are attached to a legal interest in land or a mine, this is called 'appurtenance'. Most licences do not have expiry dates (power purpose licences and short term licences are exceptions), and actual water use is often not measured. However, to maintain the right to use water under the existing *Water Act*, a licence holder must establish 'beneficial use'⁶ of water for the purposes stated in the licence, and may be requested to file a declaration of beneficial use.

It makes good business sense to improve efficiency and maximise the use of our limited water resources. Although many licence holders have improved their water use efficiency, mechanisms in the current Act to allow them to make better use of their water savings should be reviewed. In addition, there are many benefits to thinking differently about how we design water related infrastructure to reduce costs and seek future benefits like making energy from waste, recycling water or reusing 'waste' water for other purposes.⁷

Measuring actual water use helps to encourage efficiency, establish compliance, optimize water use practices and identify leaks. This information could be shared on a watershed basis. The identification of water savings could have the potential to: bring more lands into production; restore ecological health; allow for other economic activities in the community; or adapt to changing stream flow conditions.

To be successful, BC's water allocation system must provide for access to available water on a consistent and predictable basis, enable collaborative problem-solving

⁶ Beneficial use of water is a requirement under the existing *Water Act* and a condition of water licences.

⁷ See the BC government's Integrated Resource Recovery initiative for more benefits.

and sustain stream health. Consistency helps applicants and planners understand the expectations for water use and the amount of water available. Flexibility is also needed to improve the ability of users and businesses to adapt to changing climate and economies, water supplies, and public expectations. In future, allocation decisions and water licence conditions should allow for responsiveness to watershed needs or unexpected conditions, encourage the use of up-to-date technology and help focus water management efforts in priority areas.

There are three key ways in which the *Water Act* could be updated to address current water allocation challenges. One is by improving the ability to review licence terms and conditions so they can be adjusted in response to new conditions. The second is to require decision makers to consider the actual and potential impacts on the watershed as a whole when making decisions under the *Water Act*. The third is to encourage water users to maximize the use of their water and encourage the uptake of efficient tools, practices and infrastructure.

7.1 Objectives for introducing more flexibility and efficiency in the water allocation system

In order to introduce more flexibility and efficiency in the water allocation system the following objectives are proposed for a modernized *Water Act*:

1. The water allocation system emphasizes and encourages efficiencies in both water use and the administration of water as a natural resource
2. Water users and decision makers have flexibility to quickly adapt to changing environmental, economic and social conditions
3. The water allocation system integrates the management of groundwater and surface water resources where required in problem areas
4. Water users conserve water during drought or when stream health is threatened

Indicate your level of support for the objectives proposed.

- STRONGLY SUPPORT SUPPORT NEUTRAL DISAGREE STRONGLY DISAGREE

7.2 Possible Solutions

All of the options below relate to the allocation of water (where it is, or will be, regulated). For more on groundwater extraction and use see Goal Four. The



proposals contained in this section may not be appropriate for all situations and could be applied differently depending on the issues in the watershed. For example, in areas of high demand, declining stream health or drought prone areas more ‘tools’ might be enabled and applied.

OBJECTIVE ONE

The water allocation system emphasizes and encourages efficiencies in both water use and the administration of water as a natural resource.

British Columbians are very high water users and in some areas our streams do not have enough water at certain times of the year. It is important to use the water we do have as efficiently as possible. In future, beneficial use could be defined to include efficient use according to best practices. This means that if a user is withdrawing water, but has very leaky infrastructure or uses inefficient practices, then the modernized *Water Act* will provide incentives to conserve water. Actual water use measuring and reporting is recommended for all users.

In the future, licensing decisions will be based on the actual needs of the applicant with respect to their proposed use, assuming up-to-date and efficient processes. For example, irrigation licensing would be based on updated crop and soil needs using best practice irrigation, methods and equipment. Manufacturing licences would be based on the expectation that the licensee will use efficient manufacturing methods (recycling and reusing water, leak detection, and efficient equipment). Licences for new subdivisions, large developments or those requiring significant infrastructure would be encouraged to employ new asset management approaches to make best use of resources and reduce waste products (waste water reclamation and re-use).



Options to encourage water use efficiency

A. Government determines actual needs in relation to a proposed undertaking on the basis of efficient practices and works. If water is not being used in a beneficial way as authorized, then the potential for licence cancellation exists. Cancelled water rights may then be reallocated or retained for stream benefit.

OR

B. Codes for efficient infrastructure and practices in different sectors are developed, in partnership with the sector, and the modernized *Water Act* requires compliance with these codes.

AND

C. The use of incentives and economic instruments is enabled in a modernized *Water Act* to encourage water efficiency. For example:

- Penalties and bonuses;
- Water rentals and pricing structures; *and*
- Rebates for water reclamation and non-potable water use.

OR

D. Review rules for the transfer and apportionments of existing water rights.

This includes improving the ability for users to transfer from one appurtenance to another, and for the extension of rights to other purposes. These measures may provide flexibility for users to transfer water from ‘lower value’ uses to ‘higher value’ uses for both short term and long term transfers of existing allocations within watersheds. Transfers could be enabled for both consumptive uses and stream health protection purposes. To implement this proposal government would provide guidance and audit transfers to ensure there are no increased impacts on the environment or other users.

Which options do you prefer, and why? Are there others?

The administration of water refers to the time and resources required to plan, make decisions, and to regulate water activities. Low-risk amendments to licences and applications for new licenses (for example, some licence apportionments and most licence applications for domestic use) normally have little impact on the watershed but are process intensive and slow down decision making. These applications are a major part of government workload and are generally approved unless the stream is fully allocated or other conflicts exist. Applicants, water users, and all levels of government would benefit from a simplified and streamlined allocation and transfer process for low-risk applications, some apportionments and transfers.

It is for this reason WAM would consider whether some uses of water could be simply allowed to occur, rather than to licence them in accordance with particular requirements. These uses, which could be called a ‘permitted use’, could include reasonable domestic uses, stock watering, short-term uses below a threshold, and other small or low risk uses. Permitted uses could be applied to groundwater and surface water. This would then allow efforts and resources to be focused on higher risk decisions and activities in areas of water stress.

Permitted uses could also apply to existing users for domestic purposes without a right (groundwater or unrecorded surface water). Existing licensed users could be encouraged to transition their right to divert and use water to a permitted use, under specific circumstances. Consideration would have to be given to the status of the permitted use in terms of priority, whether based on purpose or dates, or whether such status protection would only be available for licences. To ensure sustainable levels of withdrawals from the resource, self-registration and reporting of the permitted use might be necessary. Any registration and reporting could be streamlined through an online system and would not necessarily require a decision.



Options to encourage administrative efficiency

E. Permitted uses would be defined and allowed under the Act in accordance with regulations applied in a **consistent** manner throughout the province.

OR

F. Permitted uses would be defined and allowed under the Act in accordance with regulations. Regulations might apply **differently** throughout the province based on risk or, if considered acceptable, defined and applied through a water allocation plan.

AND

G. **Voluntary** self-registration of the permitted use withdrawal.

OR

H. **Required** self-registration of the permitted use withdrawal.

Which options do you prefer, and why? Are there others?

What considerations would help determine which water uses and extraction rates could qualify as a permitted use (no water licence required)? What controls are needed? How should permitted use status be protected?

British Columbians expect water licence holders to use water efficiently and together with government, play a role in keeping our streams healthy. However, without accurate measuring and reporting of actual use it is hard to know the efficiency of water use or whether users comply with licence conditions. If water licence holders or applicants accurately measure and report actual use or well levels when demonstrating compliance, it would be easier to focus water management efforts where they are most needed.



Options to encourage administrative and water use efficiencies

To improve decision making times and enforcement, existing water licence holders and applicants may potentially be responsible for:

- I. Providing more detailed information about the proposed use and efficiency measures for licence applications or changes;
- J. Documenting potential environmental impacts and effects on other users in licence applications or changes;
- K. Seeking consent from, or undertaking consultation with, affected parties for licence applications or changes;
- L. Measuring and reporting actual water use when demonstrating compliance with licence conditions;
- M. Reporting well levels for regulated groundwater users;
- N. Self-registering wells, especially where groundwater is in direct hydraulic connection with surface water or in areas of known quantity concern; *or*
- O. ANY combination of the above.

Which options do you prefer, and why? Are there others?

OBJECTIVE TWO

Flexibility is provided to water users and decision makers to quickly adapt to changing environmental, economic and social conditions.

The water resource needs to be more closely managed where there are pressures on the environment caused by a lack of water, or conflicts between users, or changing conditions in a watershed. The ability to review or revisit licence terms and conditions would be useful where information shows that this is warranted due to changing conditions. Consistent criteria to determine the areas of high priority or increased pressure on water resources would assist the transparency of any reviews undertaken. These reviews could occur on a watershed or aquifer basis rather than on a licence-by-licence basis as is currently allowed. Collaboration between government agencies and licence holders on these reviews could also reduce the consultation burden, processing time and costs. Addressing these issues through collaboration would promote community understanding and result in robust adaption outcomes.



Option to provide water users and decision makers the flexibility to adapt:

A. Provide decision makers and licence holders with the ability to seek amendments of water licences' terms and conditions based on:

- New information about watershed issues, priorities or changes in supply (watershed, aquifer based) including addressing over-allocation and climate change impacts;
- The ability to use water differently e.g. bring more land into productivity, change land appurtenance or use, or to use water for a higher economic purpose;
- Incentives to consolidate licences within a community/watershed to inspire collaborative or shared management of the resource;
- Adverse impacts on aquifers or groundwater recharge zones; *or*
- Monitoring information that shows stream health is deteriorating because of lack of water.

OBJECTIVE THREE

The water allocation system integrates the management of groundwater and surface water resources where required in problem areas.

Water managers will be enabled to regulate surface and groundwater as one resource in areas where groundwater is to be regulated and hydraulic connections exist between them. If thought necessary to address conflicts, this could include groundwater licensing, see Goal Four. Considering the differences between surface water in streams and groundwater, different information could be required from applicants and different rental rates may also apply.

Through the licensing and approval process, water managers protect existing users from the short and long term impacts of increased withdrawals. Water Managers can already investigate and review surface water licences but in future they may need the ability to investigate groundwater specific issues or wells that are causing problems and require mitigation. 'Problem wells' could be causing adverse effects on the environment, human health, property or public safety, as well as other impacts. Impact assessments that demonstrate the connectivity between ground and surface waters may be needed.

Feedback is welcome on how groundwater and surface waters could be managed in an integrated manner. Groundwater regulation could be integrated into the *first-in-time first-in-right* FITFIR approach for surface water licences, depending on the length of use and age of well, or another approach could be used.



Options for the water allocation system

A. First-in-time first-in-right – FITFIR

- New surface water and groundwater, where it is regulated, are allocated based on a modified FITFIR approach.

B. Priority of use

- New surface water in streams and groundwater, where it is regulated, is allocated based on priority of use determined either in the *Water Act* or with community involvement in the water allocation plan process.

If water licences have the same priority date on the same stream, the *Water Act* currently sets the following precedence (ordered highest to lowest): domestic, waterworks, mineral trading, irrigation, mining, industrial, power, hydraulicking, storage, conservation, conveying and land improvement purposes. Many jurisdictions have modified their FITFIR arrangements (during times of low flow). Manitoba, for example, gives priority to domestic then municipal, agricultural, industrial, irrigation, and other uses.

Which option do you prefer, and why? Are there others?

OBJECTIVE FOUR

Water users will be required to conserve water during drought or when stream health is threatened.

Sometimes there is not enough water to satisfy the total demand of all users and the needs of the environment. When these water shortages occur, tough decisions have to be made including under which circumstances, and how water should be shared. Transparent, simple and fair processes are required to address both temporary and long term scarcity. The options to address water scarcity are most effective when integrated with measuring and reporting of actual use, and an effective communication and response plan such as a drought management plan. Any groundwater user may also be required to conserve water in times of drought or where stream health is threatened.



Options to address temporary water scarcity

A. Discretionary

- The decision-maker determines the approach on a case-by-case basis, balancing the effects on water users with the required environmental outcome (similar to section 9 of the *Fish Protection Act*).

B. Sharing

- All water users would reduce use on a proportional basis depending on the water supply forecast, for example, if the supply forecast shows less water than normal, then allocations would be reduced on a *pro rata* basis. This approach could be influenced by water use efficiency, creating an incentive to employ efficient practices.

C. Hierarchy of uses

- A hierarchy of uses guides how water use is reduced, for example, human and stock watering needs would be satisfied before landscape irrigation.

D. Priority date

- This approach follows FITFIR, as contemplated by the current requirements of sections 15 and 88 of the *Water Act* but could be expanded to include the protection of ecosystem values.

Which options do you prefer, and why? Are there others?

Addressing long term water scarcity will build on other changes proposed throughout this document. To be successful, solutions need to be guided by clear objectives and developed with full involvement of water users and responsible government agencies. Any reductions in water availability (whether by reduction of stream flows or water rights) may be perceived as a risk to property values, businesses or a way of life.

Long term scarcity can also be dealt with using non-regulatory tools as well as supply and demand management options, see Figure 3. Options should also build on drought management plans that individual licensees and communities may develop. Full or partial cancellation of water licences may occur if other options were applied and were unsuccessful. Planning tools such as the *Soft Path for Water* (Brandes and Brooks, 2007), *Water Balance Model and Irrigation Demand Modelling* provide opportunities to bring stakeholders together to find sustainable solutions.



Options to address long-term water scarcity

E. Through a mandatory Water Management Planning process

- In some cases the province may require a planning initiative to address long term water scarcity, such as a Water Management Plan provided for in Part 4 of the *Water Act*.

F. At the request of water users or communities

- Water licensees and other interested parties may develop a plan that addresses long term scarcity on a watershed basis and provides recommendations for supply and demand side changes to be made. Approved processes that include the wider community would need to be developed and followed.

Which option do you prefer, and why? Are there others?

Figure 3

Supply Side Options

- Increased storage
- Reservoir management
- Water rights transfers

Demand Side Options

- Improved infrastructure
- Water use efficiency improvements
- Water reclamation and reuse

GOAL FOUR Regulate Groundwater Extraction and Use

BC's groundwater characteristics are unique. Many of our most productive sand and gravel aquifers are small and shallow. These aquifers are often adjacent to, and are in direct connection with rivers and streams. Aside from the important economic benefits gained from using groundwater, it is also important to the habitat of fish and aquatic species as it provides a stable flow of cool and clean water. This is particularly important when stream flows are low and at certain times in the fish rearing cycle. In such cases, the ability to manage surface water and groundwater together is important.

This section considers how to improve the regulation of groundwater extraction and use through a modernized *Water Act*. Regulation may mean placing terms and conditions on groundwater extraction and use through a licensing or permitting process. Changes would aim to provide clarity on the extraction and use of groundwater for the million people in BC who depend on it for drinking water, and an improved investment climate for the businesses that rely on it. Feedback is welcome on the kind of regulation or controls that should be applied to groundwater extraction and use.

Groundwater extraction and use in BC is not regulated and government's ability to control its use is limited. As a result, all levels of government and citizens are challenged to find methods that can manage conflicts among water users and deal with reductions in groundwater quantity or quality concerns. This situation was partially addressed by the *Drinking Water Protection Act* and *Water Act* amendments in 2001 and the *Groundwater Protection Regulation* (GWPR) in 2004. In addition, certain large scale groundwater extractions (greater than 75 litres per second) are subject to an environmental assessment to secure a certificate under the *Environmental Assessment Act*. Other legislation or regulations affecting groundwater include the federal *Fisheries Act* and BC's *Environmental Management Act*, *Oil and Gas Activities Act*, *Environmental Assessment Act*, *Water Protection Act* and regulations applicable to water utilities.

Phase Two of the *Ground Water Protection Regulation* (GWPR), which is under development, addresses the management of groundwater by minimizing conflicts between well owners and protecting stream health. It includes provisions for siting new wells and controlling artesian flows from wells. In addition, Phase Two will provide protection to wells and aquifers by requiring additional construction and pump installation measures. Phase Two also proposes the mandatory submission of well drilling reports. Well construction and maintenance activities will continue to be regulated under the GWPR or oil and gas legislation.

Regulating the extraction and use of groundwater can provide the necessary controls to resolve conflicts over well drilling activities and the impacts of groundwater use. In some areas of the province, wells are being drilled without consideration of the well's location or its impact on streams or other users. As a result, conflicts are increasing



Wetlands in early spring
Kevin Ronneseth

between well owners and surface water licence holders as well as between humans and the environment. Recent conflicts among water users coupled with declining groundwater levels are resulting in increasing support for the regulation of groundwater use.

Regulating large groundwater extractions province-wide (e.g., water bottling plants, municipal users, large irrigators, and large industrial users) and introducing requirements for monitoring and reporting are Living Water Smart commitments. In critical areas or aquifers under stress, government is proposing to regulate the extraction and use of most groundwater withdrawals, not just large withdrawals. Individual domestic uses will be allowed in most situations.

The overall objective is that groundwater resources in BC are sustained in perpetuity. The Council of Canadian Academies’ Expert Panel on Groundwater (2009), outline the goals for groundwater sustainability as the: protection of ecosystem health, protection of groundwater supplies from depletion, protection of groundwater quality from contamination, achievement of economic and social well-being, and application of good governance.

8.1 Objective for regulating groundwater extraction and use

In addition to the objectives outlined in Goal Three the following groundwater specific objective is proposed for a modernized *Water Act*:

1. Groundwater extraction and use is regulated in priority (critical) areas and for all large withdrawals.

Indicate your level of support for the objective proposed.

STRONGLY SUPPORT
 SUPPORT
 NEUTRAL
 DISAGREE
 STRONGLY DISAGREE

8.2 Possible Solutions

Water, whether in a stream or in the ground, will be considered the same resource under the modernized *Water Act*. In addition to the possible solutions outlined Goal Three, any groundwater regulation would be designed so impacts on other water users and watershed health is considered before additional diversion and extraction of groundwater is approved.

OBJECTIVE ONE**Groundwater extraction and use is regulated in priority (critical) areas and for all large withdrawals.**

It is proposed to regulate extraction and use of groundwater above the applicable thresholds for large withdrawals, or within priority areas for all new and existing wells. The overall objective is resource protection. The possible solution includes the regulation of the extraction and use of fresh water for all purposes, including the injection of groundwater for oil and gas production. The construction of water source wells associated with oil and gas activities will continue to be regulated under oil and gas legislation.

The possible solution contemplates that if licensing of groundwater or other forms of regulation are considered necessary, existing groundwater users would be provided with transitional time to apply for their existing extraction and use to obtain protection similar to a water licence. Incentives for applying might include:

- increased security of the existing use;
- protection of the use from impacts (e.g., regulation of new well drilling on adjacent property); *and*
- an application deadline after which increased requirements to prove historic water extraction and use could apply.

**Options for determining the thresholds for large groundwater withdrawals****A. The threshold for large could be:**

- 500 m³/day for wells drilled in unconsolidated, sand and gravel aquifers or if otherwise determined to be large by a Water Management Plan.
- 100 m³/day for wells drilled into consolidated bedrock aquifers or if otherwise determined to be large by a Water Management Plan.

OR

B. The threshold for large could be:

- 250 m³/day for wells drilled in unconsolidated, sand and gravel aquifers or if otherwise determined to be large by a Water Management Plan.
- 100 m³/day for wells drilled into consolidated bedrock aquifers or if otherwise determined by a Water Management Plan.

The 500 m³/day threshold would capture mid to large sized water supply systems for small towns and larger communities, larger farms, resorts and golf courses. The 250 m³/day threshold would provide greater extraction control and would capture all of the above as well as some smaller enterprises. There would be a corresponding increase in regulatory costs.

The proposed thresholds are the highest in Canada due to the relative abundance of groundwater in some parts of BC. A lower threshold is appropriate for bedrock aquifers as they are less productive and their levels are more impacted more by extractions due to their confined nature and reduced recharge potential. Where

How much water is that?

500 m³/day would supply 200-250 single residential homes or 0.4 acre/foot of water per day.

250 m³/day would supply 100-120 single residential homes or 0.2 acre/foot of water per day.

groundwater is not abundant it may be designated as a priority area and be regulated from a lower threshold.

Which thresholds do you prefer, and why? Are there others?



Options for determining priority areas to regulate groundwater extraction and use

All groundwater users will be regulated in priority areas except for small scale extraction and use of groundwater for domestic purposes (for example 2-3m³/day).

- A. Heavy groundwater extraction and use** (rely on BC Aquifer Classification System);
- B. Area of known quantity concern** e.g., declining groundwater level, conflicts with other groundwater users, aquifers or water resources impacted by salt water intrusion;
- C. Groundwater in direct hydraulic connection** with surface water in areas of known quantity concern;
- D. Significant population that is reliant on groundwater** for drinking water;
- E. Trans-boundary aquifers;**
- F. Basins where surface water is at or near the allocation limit; or**
- G. ANY** combination of the above.

Priority areas may include the Okanagan Basin, the Lower Mainland, the Gulf Islands and the East Coast of Vancouver Island. The above criteria would allow for the identification of other basins such as in the southern interior of BC, where the availability of surface water is limited and tighter controls on the extraction and use of groundwater may be desirable to protect the security of existing licences and environmental flows.

Which options do you prefer, and why? Are there others?

PART THREE

Getting involved



Douglas Lake
Reflections
Mike Wei

9 Participating in the Water Act modernization process

The BC government is seeking a diverse range of perspectives and interests on a modernized *Water Act*. Many British Columbians want to influence the way water in BC is managed for the future. A variety of opportunities for input are available to make efficient use of your time and resources.

9.1 Online information and engagement

The Living Water Smart (LWS) website www.livingwatersmart.ca is the reference place for the WAM process and it is complemented by an online discussion forum or blog. Participation on the blog will be considered input into the *Water Act* modernization process. Participants can either observe or participate in the dialogue. The blog will help identify issues and potential impacts early and transparently in the policy development process. The blog is a quick and cost-effective engagement tool that allows a diverse range of values, viewpoints and interests to be raised and considered. Hosting the blog allows government to convene discussion across the province and respond to feedback.

9.2 Making a formal submission

Government is interested in your views on the potential solutions outlined in this discussion paper. Any British Columbian can make a submission on the *Water Act* modernization initiative. Guiding questions are provided throughout the document and in the submission guide. Submissions can be posted by mail or sent electronically (preferred). Multiple versions of the same submission or form letters will be accepted, but will not carry any more weight than the points in any individual submission. The submissions and other input will be assessed using the proposed principles and the objectives in each goal.

Submissions may range from a letter, to a substantial document with relevant data or evidence included. By making a submission you are agreeing that your submission will be treated as public information and may be made available on a public website. Please consider this as you prepare your submission. Personal contact details will be removed before the submission is made publicly available.

When making a submission, the following information is requested:

- Name of submitter / submitting organization;
- Location and contact details including email address if you have one.

Submissions are invited until April 30, 2010 and can be sent

by email to:

livingwatersmart@gov.bc.ca

by post to:

Water Act Modernization Submission
 Ministry of Environment
 Water Stewardship Division
 PO Box 9362
 Stn Prov Govt
 Victoria, BC V8W 9M2

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9.3 Submission guide

Protecting stream health and aquatic environments

Goal One, Resources 10.2

- Indicate your level of support for the proposed objectives for protecting stream health and aquatic environments.
- Which options do you prefer, and why? Are there others?
- Under what conditions should a water allocation plan be developed and how should it be applied?

Improving water governance

Goal Two, Resources 10.4, 10.5, 10.6

- Indicate your level of support for the proposed objectives for improving water governance.
- Which approach do you prefer, and why? Are there others?
- What scale of watershed is most appropriate for water planning and management?
- What funding solutions might help to implement the approaches?
- What are the important considerations for accountability, transparency and dispute resolution processes in any delegated or shared approach?
- What are the benefits and implications of sharing roles for water stewardship?

Introducing more flexibility and efficiency into the water allocation system

Goal Three

- Indicate your level of support for the proposed objectives for introducing more flexibility and efficiency into the water allocation system.
- Which options do you prefer, and why? Are there others?
- What considerations would help determine which water uses and extraction rates could be a permitted use (no water licence required)? What controls are needed? How should permitted use status be protected?

Regulating groundwater extraction and use

Goal Four, Goal Three, Resource 10.3

- Indicate your level of support for the objective proposed for regulating groundwater extraction and use.
- Which thresholds do you prefer, and why?
- What are the appropriate criteria for determining the priority areas for groundwater extraction and use?

Additional input requested.

- Your views are welcome on the proposed principles (pg 5).
- Are there additional opportunities for the modernization of the *Water Act* to integrate with other federal and provincial legislation?
- What are the appropriate criteria for determining at risk or priority watersheds?
- How will these proposals specifically affect you or your community?
- How can we improve the proposals so your interests are taken into account?
- What kinds of collaborative processes would you like to see for future water stewardship?
- Will the possible solutions adequately equip future generations to manage water sustainably?
- What have we missed?

10 Resources

10.1 Glossary and Acronyms

Adaptation is changing behaviour to adjust to the predicted changes in the natural environment due to climate change. “Adjustment in the natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities” (IPCC Third Assessment Report: Glossary of Terms).

Aquatic Ecosystem refers to a community of organisms (bugs, plants, wildlife, and their surroundings) that live in water and are dependent on each other and their environment for survival.

Aquifer is an underground deposit of permeable materials (usually sand or gravel), where water is stored. Aquifers can be interconnected to other aquifers and surface water bodies and can occur at various depths.

Beneficial Use (of water) is the use of water to derive a positive benefit or result. Beneficial use is tied to the purpose of the authorized use under the terms or conditions of a licence.

Climate change Refers to changes in long-term trends in the average climate, such as changes in average temperatures.

Drought is a recurrent feature of climate involving a deficiency of precipitation over an extended period of time, resulting in a water shortage.

Enabling legislation allows for subsequent orders or regulations to be made and/or for discretion or powers to be delegated, so that responses can be tailored depending on the needs of the region or issue. This helps legislation adapt or respond quickly to future issues or climate change adaptation needs.

Environmental flow is the amount of water required in a stream to maintain healthy ecosystems.

FITFIR First-in-time, first-in-right. This is the way surface water licences are prioritized in BC.

Groundwater means water occurring beneath the ground and includes water contained or flowing in shallow sand and gravel aquifers or deep bedrock.

Instream flow requirements refer to what fish, wildlife, streams need in a water body so that it can function properly. These requirements refer to the amount of water flowing through a natural stream needed to sustain, rehabilitate, or restore the ecological functions of a stream in terms of hydrology, biology, geomorphology, water quality, and connectivity.

Local Government in British Columbia is comprised of 160 municipalities, 27 regional districts, and 227 improvement districts. Regional districts cover the province and have a variable role that could include services such as parks, emergency telephone services, and waterworks. Municipalities are widely scattered and have a broad mandate to address the existing and future needs of their community. Improvement districts are

RESOURCES

usually small, rural, and may be responsible for local services such as fire protection and water servicing.

LWS *Living Water Smart: BC's Water Plan.*

Regional Water Manager is a government employee that is designated in writing as a Regional Water Manager (includes designated assistant or acting regional water managers). A Regional Water Manager is granted specific powers under the *Water Act*.

Riparian zones /areas are between the land and a surface water body. Plants alongside the banks of the water body are called riparian vegetation and are important for the health of the stream and to stop bank erosion.

Stream has a wide definition under the *Water Act* and includes a natural watercourse or source of supply, whether usually containing water or not, and a lake, river, creek, spring, ravine, swamp and gulch.

Stream health is the combined measure of a stream's ecological integrity and function. This includes flow variability between seasons, the ability of the stream to provide environmental services, water quality and its resilience to disturbance. Stream health can be measured using water chemistry, biological monitoring and stream flow information.

Surface water means water in a stream as defined in the *Water Act*.

Undertaking means a project for the diversion and use of water or power and includes all the land and property, as well as the general scheme for acquisition and operation of the works. An undertaking is usually in reference to a community type water system for the benefit of the population of an area.

WAM *Water Act Modernization* (the project to reform BC's *Water Act*).

Water allocation plans are operational planning tools that help determine the quantity of water that is required in a watershed to protect stream health and identify the quantity of water still available for allocation. Currently they are voluntary and only used in Vancouver Island.

Water governance includes the laws and regulations, the agencies and institutions that are responsible for decision making and the policies and procedures that are used to make decisions and manage water resources.

Wetlands refer to land that is saturated with water long enough to promote wetland or aquatic processes as indicated by poorly drained soils, water tolerant vegetation and various kinds of biological activity adapted to a wet environment. Wetlands usually support diverse forms of life, and provide significant benefits to the environment.

Watershed is the region or area of land that drains into a river, river system, or other body of water. Watersheds are divided by mountains or hill ridges.

Water stewardship is an ethic by which British Columbians care for, and are responsible for, the sustainability of our water resource and aquatic ecosystems.

Works generally refer to the infrastructure that is built or installed to facilitate the diversion, use or storage of water, or for the production, transmission or use of electricity, or changes in and about a stream or stream channel (see the *Water Act* for a more detailed definition).

10.2 Environmental laws protecting stream health in British Columbia

There are several pieces of provincial legislation other than the *Water Act* that regulate land based activities to reduce the effects of discharges to streams and maintain natural stream flow. This is outlined in Table 2.

The *Environmental Management Act* protects stream health by regulating direct discharges to streams and setting codes of practice that reduce diffuse impacts from land based activities. The *Forest and Range Practices Act* addresses forestry activities and stream health, including timber harvesting, road building, silviculture, and range practices. The *Environmental Assessment Act* provides an opportunity to review projects that exceed specified thresholds, influencing measures within approvals to protect stream health. Local governments authorized by the *Local Government Act* and *Community Charter* influence stream health through their role in land use planning, zoning, approval of developments, and establishing bylaws. The *Public Health Act* regulates on-site sewage systems that can also negatively affect stream health by introducing excessive nutrients. The effectiveness of stream health protection is improved when there is coordination among these laws.

Federal laws that contribute to the protection of stream health include the *Fisheries Act*, *Species at Risk Act*, and the *Canadian Environmental Assessment Act*. Fisheries and Oceans Canada's Wild Salmon Policy also influences fisheries management and stream health objectives.

Table 2
Potential threats to stream health and pertinent provincial legislation

Potential threats to stream health	Example of activity	Provincial legislation
Direct discharge into stream	<ul style="list-style-type: none"> ■ Authorized point source discharges e.g. mines, sewage treatment plants, pulp mills, landfills ■ Unauthorized dumping of material or unauthorized filling of wetlands or lakeshore ■ Cumulative effects of multiple land use in watershed 	<i>Environmental Management Act</i> <i>Environmental Assessment Act</i> <i>Fish Protection Act</i> <i>Drinking Water Protection Act</i> <i>Water Act</i>
Diffuse discharges	<ul style="list-style-type: none"> ■ Input of pollutants from runoff caused by: stormwater from urbanization, agricultural activities, reduced forest cover, sediment and nutrient from forestry activities, and the development of transportation and energy corridors ■ Poorly functioning septic systems ■ Cumulative effects of multiple land use in watershed 	<i>Forest and Range Practices Act</i> <i>Fish Protection Act,</i> <i>Riparian Areas Regulation</i> <i>Environmental Management Act</i> <i>Drinking Water Protection Act</i> <i>Public Health Act, Municipal Sewage Regulation</i>
Changes to stream channel and riparian vegetation	<ul style="list-style-type: none"> ■ Inappropriate stream access or crossing (e.g., livestock, ATVs, roads) leading to vegetation loss and erosion ■ Straightening of a stream channel ■ Isolating wetlands or other habitat from the main stream channel ■ Barriers to fish movement from improper culvert design 	<i>Forest and Range Practices Act</i> <i>Fish Protection Act, Riparian Areas Regulation, and Sensitive Stream Regulation</i> <i>Water Act</i>
Withdrawal of water	<ul style="list-style-type: none"> ■ Excessive water withdrawal causing chronic degradation and reduced dilution of permitted discharges ■ Withdrawal during drought ■ Release of stored water causing unexpected flows ■ Groundwater pumping that is in direct connection with surface water 	<i>Water Act</i> <i>Environmental Management Act</i> <i>Environmental Assessment Act</i> Not regulated

10.3 Groundwater wells and proposed thresholds

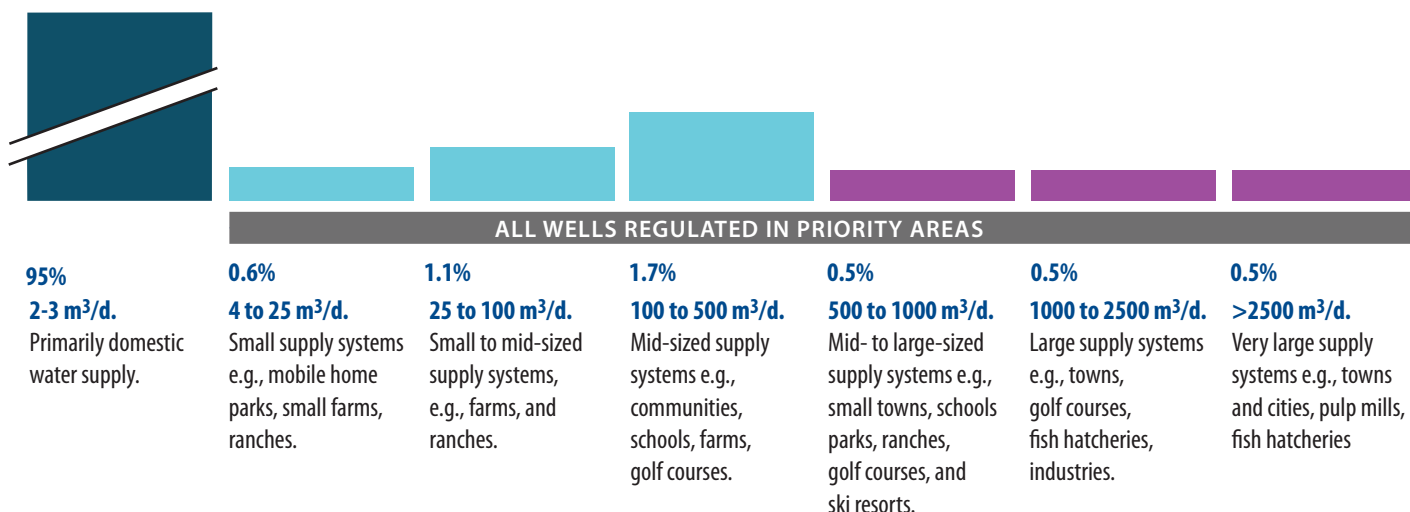
BC's WELLS database has close to 100,000 water well records submitted voluntarily by drillers since the 1960s. The database provides useful information about the kinds of wells drilled in BC and the use of the extracted groundwater. For a variety of reasons, the database contains approximately 50% of the records for wells that have been drilled in BC.

Using the information from the WELLS database, the wells have been divided into 7 categories ranging from small wells used for individual domestic purposes (95%) to large wells used for industrial practices (0.5%). This data relates to the size of the well and not the volume of water extracted. The figures below show the size of wells and likely uses that would be captured by the proposed thresholds for groundwater extraction and use. By concentrating on the larger wells, the regulation of groundwater extraction would capture a small percentage of the wells but a large percentage of the volume of groundwater extracted.

OPTION A

WELLS 500 m³/DAY OR GREATER

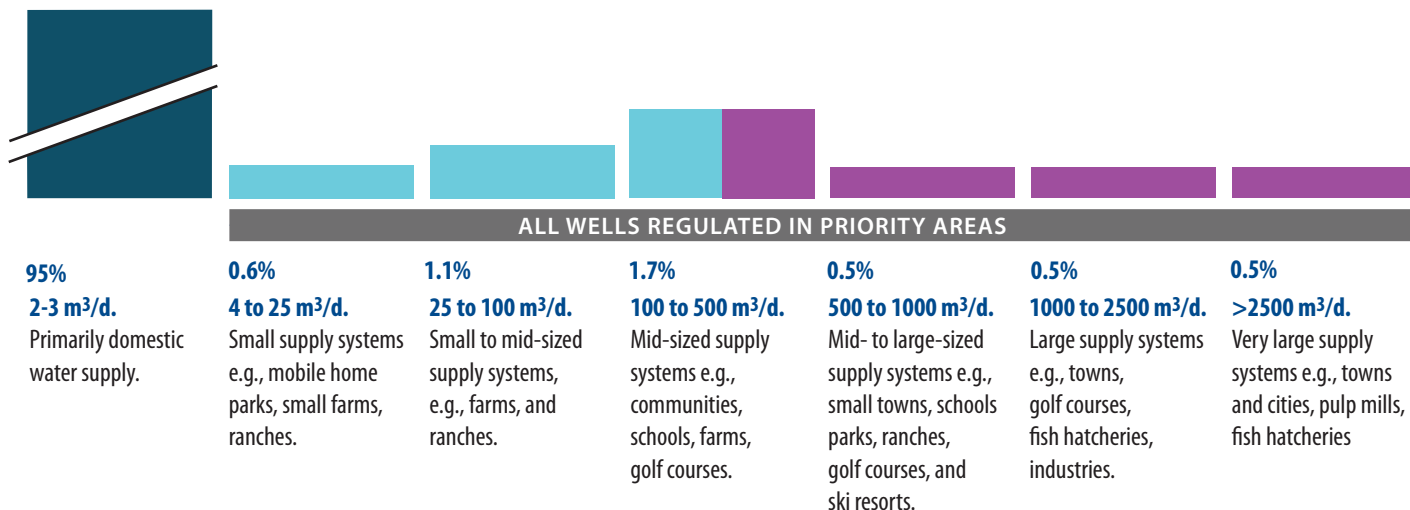
- PERMITTED USES
- NOT REGULATED OUTSIDE PRIORITY AREAS
- REGULATED OUTSIDE PRIORITY AREAS



OPTION B

WELLS 250 m³/DAY OR GREATER

- PERMITTED USES
- NOT REGULATED OUTSIDE PRIORITY AREAS
- REGULATED OUTSIDE PRIORITY AREAS



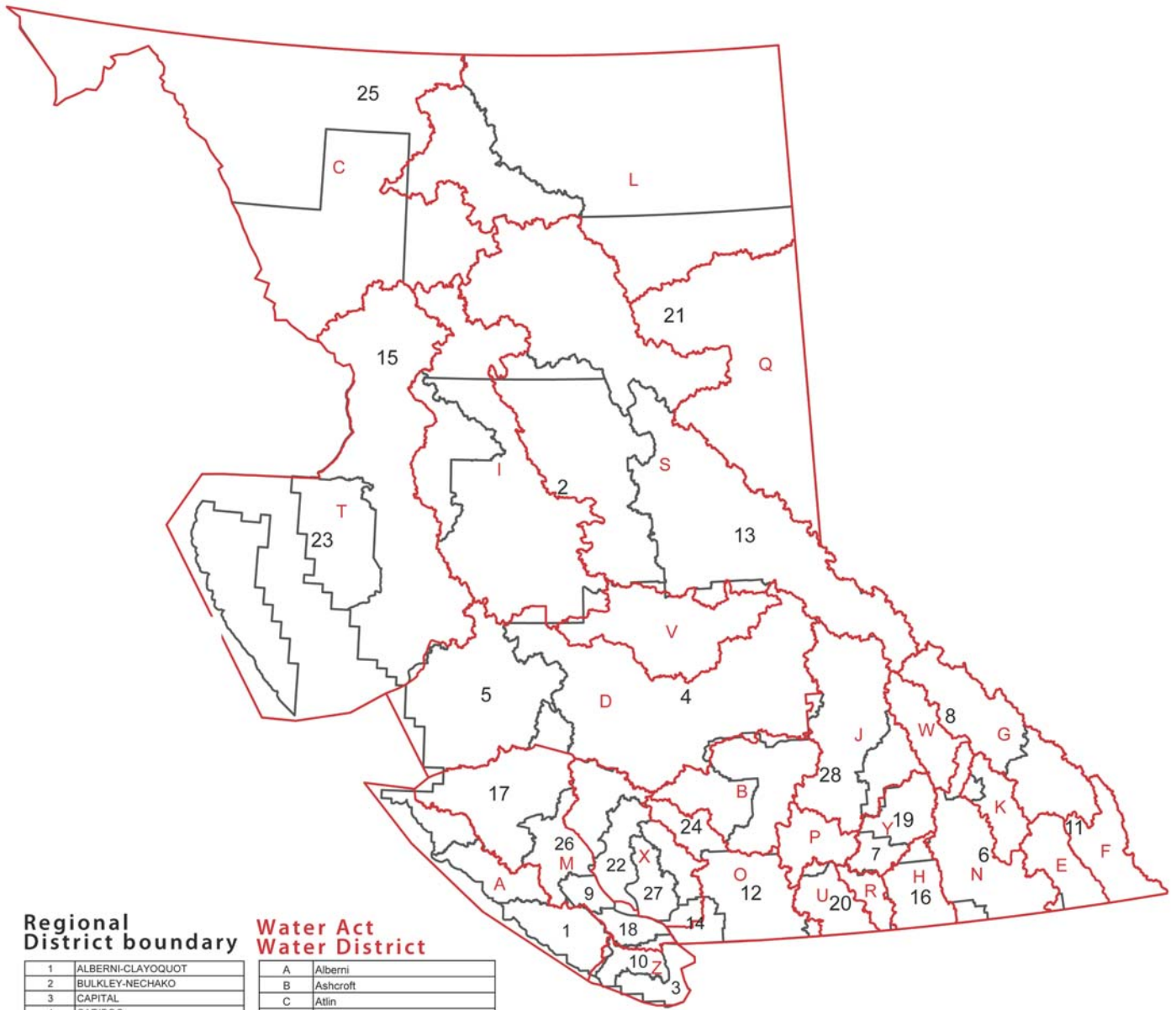
10.4 Comparison of possible water governance solutions

	CENTRALIZED APPROACH	SHARED APPROACH	DELEGATED APPROACH
Decision Making Accountability to consult with First Nations retained with the province in all approaches	<i>All decisions rest with the province</i>	<i>Delegation of some decisions to locally elected or appointed representatives, such as to municipal, regional district or other local authorities</i> <i>Province to retain high risk, multiple-watershed or multi agency decision making</i>	<i>Delegation of most decisions to locally elected board or committee with cross sector and government (all levels) representation</i> <i>Province to retain high risk, multiple-watershed or multi agency decision making</i>
Functions exact functions to be worked out with public input	<i>All current functions rest with province. PLUS added functions including:</i> <ul style="list-style-type: none"> ■ Planning and licensing groundwater extraction and use ■ Integration between natural resource agencies and federal government ■ Integrated regulation of connected groundwater and stream water resources ■ Improving information systems and capacity ■ Defining 'stream health' and determining environmental flow needs ■ Water allocation planning 	<i>Partner agencies keep existing functions PLUS could take on:</i> <ul style="list-style-type: none"> ■ Regional visioning for water ■ Approving low risk changes in and about streams ■ Compliance and enforcement ■ Public education and outreach activities ■ Use Regional Growth Strategies, Official Community Plans or other land use plans to implement water priorities ■ Establish advisory committees for First Nation and stakeholder involvement 	<i>Watershed Agencies could take on the following functions:</i> <ul style="list-style-type: none"> ■ Regional visioning and watershed planning ■ Water allocation planning and licensing (includes determination of environmental flow needs) ■ Approving changes in and about streams ■ Oversight over transfer or extension of water rights ■ Compliance and enforcement ■ Drought and flood response ■ Public education and outreach activities ■ Watershed restoration ■ Reporting on watershed health ■ Formal opportunities to influence resource management and land use planning
Provincial Support	N/A	<ul style="list-style-type: none"> ■ Laws, policies, institutional structures and funding ■ Setting standards, improving information systems and raising capacity, ■ Defining 'stream health' and determining environmental flow needs ■ Water allocation planning and licensing ■ Integration between natural resource agencies and groundwater and surface water resources ■ Audit and dispute resolution processes 	<ul style="list-style-type: none"> ■ Laws, policies, institutional structures and funding ■ Setting standards, improving information systems and raising capacity ■ Defining 'stream health' and environmental flow needs assessment methods ■ Audit and dispute resolution processes

10.5 Characteristics of a water governance framework

	THIS INCLUDES	EXAMPLE
Laws, rules and financing arrangements	<p>Laws, rules and regulations, policies, legislated processes</p> <p>Financing and provision of budgets to undertake work</p> <p>Structures to ensure cooperation among governments</p>	<p><i>Water Act, Fish Protection Act, Water Protection Act, Environmental Management Act</i></p> <p>Government budgets, powers of taxation</p> <p>First Nation treaties, McKenzie River Basin Board, Columbia River Treaty</p>
Institutions, roles and responsibilities	<p>Establish roles and functions and standards for water –related institutions at all levels of government and non government sectors</p> <p>Structures to ensure participation and transparent decision making</p> <p>Coordination mechanisms established at local scale</p> <p>Financing ability of organizations</p>	<p>Science and information standards and systems, watershed agencies, role of government and non government actors</p> <p>Watershed management plans, water licensing procedures, methods to set environmental flow needs</p> <p>Watershed collaboration, agreements to work together, water budgets or models</p> <p>Taxing powers, development cost contributions, water pricing structures</p>
Operational management functions	<p>Watershed protection and planning</p> <p>Water use regulation</p> <p>Water infrastructure management</p> <p>Drinking water source protection</p> <p>Flood and drought hazard management</p>	<p>Watershed restoration, monitoring and implementing appropriate responses, climate change adaptation initiatives</p> <p>Water allocation planning and decision making, licensing and enforcement</p> <p>Water infrastructure planning, water demand management, education, water utilities, and dam safety</p> <p>Drinking water source protection planning</p> <p>Hydrometric network, water supply/flood forecasting, drought and flood responses</p>

10.6 Map of existing water district and Regional District boundaries.



Regional District boundary

1	ALBERNI-CLAYOQUOT
2	BULKLEY-NECHAKO
3	CAPITAL
4	CARIBOO
5	CENTRAL COAST
6	CENTRAL KOOTENAY
7	CENTRAL OKANAGAN
8	COLUMBIA SHUSWAP
9	COMOX VALLEY
10	COWICHAN VALLEY
11	EAST KOOTENAY
12	FRASER VALLEY
13	FRASER-FORT GEORGE
14	GREATER VANCOUVER
15	KITIMAT-STIKINE
16	KOOTENAY BOUNDARY
17	MOUNT WADDINGTON
18	NANAIMO
19	NORTH OKANAGAN
20	OKANAGAN-SIMILKAMEEN
21	PEACE RIVER
22	POWELL RIVER
23	SKEENA-QUEEN CHARLOTTE
24	SQUAMISH-LILLOOET
25	STIKINE
26	STRATHCONA
27	SUNSHINE COAST
28	THOMPSON-NICOLA

Water Act Water District

A	Alberni
B	Ashcroft
C	Atlin
D	Cariboo
E	Cranbrook
F	Fernie
G	Golden
H	Grand Forks
I	Hazleton
J	Kamloops
K	Kaslo
L	Liard
M	Nanaimo
N	Nelson
O	New Westminster
P	Nicola
Q	Peace River
R	Penticton
S	Prince George
T	Prince Rupert
U	Princeton
V	Quesnel
W	Revelstoke
X	Vancouver
Y	Vernon
Z	Victoria

— Water Act Water District boundary
 — Regional District boundary

10.7 Possible solutions at a glance

GOAL ONE Protect stream health and aquatic environments

OBJECTIVES	POSSIBLE SOLUTIONS		
<p>OBJECTIVE ONE</p> <p>Environmental flow needs are considered in all water allocation decisions to protect stream health</p>	<p>OPTION A</p> <p>Environmental Flow Guidelines Decision maker could deviate from the environmental flow recommendations with clear justification.</p>	OR	<p>OPTION B</p> <p>Environmental Flow Standards The decision maker is bound by the environmental flow recommendations with no exceptions.</p>
<p>OBJECTIVE TWO</p> <p>Watershed or aquifer-based water allocation plans include environmental flows and water available for consumptive use</p>	<p>OPTION A</p> <p>Optional development of water allocation plans – at the discretion of Regional Water Manager.</p> <p>AND</p> <p>OPTION C</p> <p>Decision maker must consider plan.</p>	OR	<p>OPTION B</p> <p>Mandatory development of water allocation plans required for some or all areas of the province. Areas determined by the Comptroller of Water Rights.</p> <p>AND</p> <p>OPTION D</p> <p>Decision maker must follow plan.</p>
<p>OBJECTIVE THREE</p> <p>Habitat and riparian area protection provisions are enhanced</p>	<p>OPTION A</p> <p>Maintain the requirement for an engineer’s order to prohibit dumping of material into streams (reflects current situation).</p>		<p>OPTION B</p> <p>Amend the <i>Water Act</i> to include a prohibition against dumping debris into streams, with a requirement for the person responsible for dumping to remediate damage.</p>

GOAL TWO Improve water governance arrangements

OBJECTIVES	POSSIBLE SOLUTIONS		
<p>OBJECTIVE ONE</p> <p>Governance roles and accountabilities are clarified</p>	<p>OPTION A</p> <p>Central approach</p> <p>The provincial government would continue to make decisions.</p>	OR	<p>OPTION B</p> <p>Shared approach</p> <p>specific water management functions and decisions are shared with a First Nation or partner institution such as an existing Regional District, depending on their capacity or willingness to undertake responsibilities.</p>
<p>OBJECTIVE TWO</p> <p>Governance arrangements are flexible and responsive to future needs and values</p>		OR	<p>OPTION C</p> <p>Delegated approach</p> <p>most water management functions and decisions would be delegated to a watershed or regional-scale agency which could be called a “watershed agency”.</p>
<p>OBJECTIVE THREE</p> <p>Management is coordinated with neighbouring jurisdictions across all levels of government and those with a major interest in the watershed</p>			

GOAL THREE Introduce more flexibility and efficiency in the water allocation system

OBJECTIVES	POSSIBLE SOLUTIONS	
<p>OBJECTIVE ONE</p> <p>The water allocation system emphasizes and encourages efficiencies in water use and in the administration of water as a natural resource</p>	<p>OPTION A</p> <p>Government determines actual needs in relation to a proposed undertaking on the basis of efficient practices and works.</p>	<p>OR OPTION B</p> <p>Codes for efficient infrastructure and practices in different sectors are developed (in partnership with the sector) and the modernized <i>Water Act</i> requires compliance with these codes.</p>
	<p>AND</p>	<p>AND</p>
	<p>OPTION C</p> <p>The modernized <i>Water Act</i> enables the use of incentives and economic instruments such as penalties, pricing or incentives to encourage water efficiency.</p>	<p>OR OPTION D</p> <p>Review rules for the transfer and apportionments of existing water rights.</p>
	<p>AND</p>	<p>AND</p>
	<p>OPTION E</p> <p>Permitted uses would be defined and allowed under the Act in accordance with regulations applied in a consistent manner throughout the province.</p>	<p>OR OPTION F</p> <p>Permitted uses would be defined and allowed under the Act in accordance with regulations that might apply differently throughout the province.</p>
	<p>AND</p>	<p>AND</p>
	<p>OPTION G</p> <p>Voluntary self registration of the permitted use withdrawal.</p>	<p>OR OPTION H</p> <p>Required self registration of the permitted use withdrawal.</p>
	<p>AND</p> <p>To improve decision making times and enforcement, existing water licence holders and applicants may potentially be responsible for:</p>	
	<p>OPTION I</p> <p>Providing more detailed information about the proposed use and efficiency measures for licence applications or changes;</p>	
	<p>OPTION J</p> <p>Documenting potential environmental impacts and effects on other users in licence applications or changes;</p>	
<p>OPTION K</p> <p>Seeking consent from, or undertaking consultation with, affected parties for licence applications or changes;</p>		
<p>OPTION L</p> <p>Measuring and reporting actual water use when demonstrating compliance with licence conditions;</p>		
<p>OPTION M</p> <p>Reporting well levels for regulated groundwater users;</p>		
<p>OPTION N</p> <p>Self-registering wells, especially where groundwater is in direct hydraulic connection with surface water or in areas of known quantity concern; <i>or</i></p>		
<p>OPTION O</p> <p>ANY combination of the above.</p>		

GOAL THREE Introduce more flexibility and efficiency in the water allocation system *continued*

OBJECTIVES	POSSIBLE SOLUTIONS			
<p>OBJECTIVE TWO</p> <p>Water users and decision makers have flexibility to quickly adapt to changing environmental, economic and social conditions</p>	<p>OPTION A</p> <p>Provide decision makers and licence holders with the ability to seek amendment of water licences terms and conditions based on:</p> <ul style="list-style-type: none"> ■ New information about watershed issues, priorities or changes in supply; ■ The ability to use water differently; ■ Incentives to consolidate licences within a community/ watershed; ■ Adverse impacts on aquifers or groundwater recharge zones; <i>and</i> ■ Monitoring information that shows stream health is deteriorating because of lack of water. 			
<p>OBJECTIVE THREE</p> <p>The water allocation system integrates the management of groundwater and surface water resources where required for problem areas</p>	<p>OPTION A</p> <p>First-in-time first-in-right (FITFIR)</p> <p>New surface water and groundwater are allocated based on a modified FITFIR approach.</p>	<p>OR</p> <p>OPTION B</p> <p>Priority of use new surface water in streams and groundwater are allocated based on priority of use determined either in the <i>Water Act</i> or with community involvement in the water allocation plan process.</p>		
<p>OBJECTIVE FOUR</p> <p>Water users will be required to conserve water during drought or when stream health is threatened</p>	<p>SHORT-TERM SCARCITY</p> <p>OPTION A</p> <p>Discretional The decision-maker determines the approach on a case-by-case basis, balancing the effects on water users with environmental outcome.</p>	<p>OR</p> <p>SHORT-TERM SCARCITY</p> <p>OPTION B</p> <p>Sharing All water users would reduce use on a proportional basis depending on the water supply forecast.</p>	<p>OR</p> <p>SHORT-TERM SCARCITY</p> <p>OPTION C</p> <p>Hierarchy of uses A hierarchy of uses guides how water use is reduced.</p>	<p>OR</p> <p>SHORT-TERM SCARCITY</p> <p>OPTION D</p> <p>Priority date This approach follows FITFIR but could be expanded to include protection of ecosystem values.</p>
	<p>LONG-TERM SCARCITY</p> <p>OPTION D</p> <p>Through a mandatory Water Management Planning process – such as the current provisions of Part 4 of the <i>Water Act</i>.</p>	<p>OR</p> <p>LONG-TERM SCARCITY</p> <p>OPTION F</p> <p>At the request of water users or communities who develop a plan that addresses long term scarcity and provides recommendations.</p>		

GOAL FOUR Regulate groundwater extraction and use in priority areas and for large withdrawals

OBJECTIVES	POSSIBLE SOLUTIONS	
<p>OBJECTIVE 1 Groundwater extraction and use is regulated in priority (critical) areas and for all large withdrawals</p>	<p>OPTION A Large groundwater withdrawals are: 500 m³/day for wells drilled in unconsolidated, sand and gravel aquifers, <i>and</i> 100 m³/day for wells drilled into consolidated bedrock aquifers, or if otherwise determined by a Water Management Plan.</p>	<p>OPTION B Large groundwater withdrawals are: 250 m³/day for wells drilled in unconsolidated, sand and gravel aquifers, <i>and</i> 100 m³/day for wells drilled into consolidated bedrock aquifers or if otherwise determined by a Water Management Plan.</p>

AND

OPTIONS FOR DETERMINING PRIORITY AREAS:

- A. **Heavy groundwater extraction** and use;
- B. **Area of known quantity concern;**
- C. **Groundwater in direct hydraulic connection with surface** water in areas of known quantity concern;
- D. **Significant population who is reliant** on groundwater for drinking water;
- E. **Trans-boundary** aquifers;
- F. **Basins where surface water** is at or near the allocation limit; *or*
- G. **ANY** combination of the above.



Water is everyone's concern

and we can all play a role in determining BC's water future. We would like to hear from you and encourage you to share your thoughts on the kind of future you envision for BC's water.



British Columbia's
Water Act
Modernization
Discussion Paper

**Submissions to modernize British
Columbia's Water Act are invited
until April 30, 2010 and can be sent**

by email to:
livingwatersmart@gov.bc.ca

OR

by post to:
Water Act Modernization Submission
Ministry of Environment
Water Stewardship Division
PO Box 9362
Stn Prov Govt
Victoria, BC V8W 9M2